## Claims

[c1] What is claimed is:

1.A writing method for CD-MRW comprising:

(a)obtaining data to be written to a CD-MRW substrate;

(b)determining a write packet range of the data;

(c)identifying any defect blocks in the write packet range;

(d)identifying breakpoints in the write packet range based on the defect blocks;

(e)splitting the write packet range into at least two sub-ranges based on the breakpoints; and

(f)individually writing each sub-range.

[c2] 2.The method of claim 1 wherein the sub-ranges comprises:

a continuous packet range located in a data area (DA), the continuous packet range having no defect blocks; and

a defect packet range having a defect block;

wherein different sub-ranges are processed by different writing procedures.

[c3] 3.The method of claim 2 wherein the continuous packet range further comprises:

a complete packet range having wholly continuous packets; and

a partial packet range;

wherein different continuous packet ranges are processed by different writing procedures.

[c4] 4.The method of claim 3 wherein the writing procedure of the complete packet range comprises:

overwriting each packet of the complete packet range directly.

[c5] 5.The method of claim 3 wherein the writing procedure of the partial packet range comprises:

(a)reading an original partial packet;

(b)replacing corresponding write blocks in the original partial packet to generate a write packet; and

(c)writing the entire write packet back over the original partial packet.

[c6] 6.The method of claim 2 wherein the writing procedure of the defect packet range comprises:
(a)reading a replace packet in a spare area (SA);
(b)replacing corresponding write blocks in the replace packet to generate a modified replace packet; and
(c)writing the modified replace packet back to the SA.

[c7] 7.The method of claim 1 wherein the writing method further comprises:
identifying any SAs in the write packet range; and
identifying the breakpoints based on the SAs in the write packet range.

[c8] 8.The method of claim 1 wherein the breakpoint indicates a packet having a defect block.

[c9] 9.The method of claim 1 wherein the breakpoint is an SA.

[c10] 10.The method of claim 1 wherein the breakpoint is a partial packet.

[c11] 11.The method of claim 1 wherein the breakpoint is a packet having a defect block.

[c12] 12.A reading method for CD-MRW comprising:
(a)determining a read block range of the data;
(b)identifying any defect blocks in the read block range;
(c)identifying breakpoints in the read block range based on the defect blocks;
(d)splitting the read block range into at least two sub-ranges based on the breakpoints; and
(e)individually reading each sub-range.

[c13] 13.The method of claim 12 wherein the sub-ranges comprises:
a continuous block range located in a DA, the continuous block range having no defect blocks; and
a defect block range having a defect block;
wherein different sub-ranges are processed by different reading procedures.

[c14] 14.The method of claim 13 wherein the reading procedure of the continuous block range comprises:

(a)reading a block in the continuous block range; and

(b)transferring data of the block to a host computer.

[c15] 15.The method of claim 13 wherein the reading procedure of the defect block range comprises:

(a)reading a replace block in an SA; and

(b)transferring data of the replace block to a host computer.